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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,363	01/16/2004	Brad Benson	200310509-1	9897

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EXAMINER

NGUYEN, HOA CAO

ART UNIT PAPER NUMBER

2841

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,363

Applicant(s)

BENSON, BRAD

Examiner

Hoa C. Nguyen

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-19 is/are pending in the application.
- 4a) Of the above claim(s) 6-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The amendment filed on 3/3/06 has been entered. Applicants have amended the specification and claim 1, and claim 5 is cancelled.

Specification

2. The amended specification is approved.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al. (US 5729897) further in view of Ames et al. (US 6617518).

Regarding claim 1, as can be seen in figures 1, 32, and 37, Schmidt et al. disclose a flexible circuit (foil circuit board, see abstract), comprising:

(a) A substrate 2 having at least one opening D, see column 4, lines 11-12 and column 10, lines 14-18;

(b) an electrical conductor 1 bonded to a first surface of the substrate, see column 4, lines 12-13;

(c) a first cover layer A bonded to the first surface of the substrate and to the electrical conductor; and a second cover layer A' bonded to a second surface of the substrate and to the first cover layer through the at least one opening, see column 10, lines 7-18.

However, Schmidt et al. failed to disclose the at least one opening is located in an environmentally stressed region.

Ames et al., as shown in figure 3, disclose a flexible circuit 10 (flex cable) comprising a flexible substrate 42, an electrical conductor 38 bonded to the first surface of the substrate, see column 6, lines 59-65; and cover layers 54 coated the substrate and the conductor layer, see column 7, lines 19-23.

Ames et al. further disclose that the flex cable is bendable and can be bent into a desired shape or angle, see column 3, lines 22-26; and flap openings or through holes may be formed in the flex cable to enhance its flexibility, which is to prevent stress in the flex cable, see column 5, lines 15-25.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the teachings from Ames et al. to make the at least one opening on the flexible circuit of Schmidt et al. at an environmentally stressed region in order to release stress and to increase flexibility for preventing fracture and break at the bent location.

Regarding claim 2, Schmidt et al. disclose the substrate comprises a polymer (polyimide is known as polymer resin, which is commonly used for coating purposes), see column 4, line 14-15.

Regarding claim 3, Schmidt et al. disclose the electrical conductor comprises a metallic conductor (copper foil), see column 4, lines 13-14.

Regarding claim 4, Schmidt et al. disclose the first and second cover layers (A, A') comprise a polymer, see column 9, line 56 continuing column 10, line 6.

Response to Arguments

6. Applicant's arguments filed 1/24/06 have been fully considered but they are not persuasive. Applicant arguments:

(a) Page 7, second paragraph states: The Office Action states in paragraph 7 that Schmidt teaches "wherein said at least one opening is located in an environmentally stressed region" at Col. 6, lines 59-65, col. 7 lines 19-23, Col. 3 lines 22-26, and Col. 4 lines 15-25".

In paragraph 7 of the Office action dated 11/15/05, the Examiner did not state Schmidt et al. teach the above. In the paragraph 7, the Examiner discloses what Schmidt et al. teach and what not, and then the Examiner discloses what Ames et al. teach and that can be applied into the flexible circuit board of Schmidt et al.

(b) Page 7, last paragraph states that even Ames et al. teach in column 5, lines 15-25 that the flap opening formed in the flex cable also helps to allow the flex cable to be bent into its desired shape does not teach or suggest anywhere the use of an opening located in an environmentally stressed region is not persuasive.

The Examiner firmly considers the "the flex cable to be bent into its desired shape" suggests the use of an opening located in an environmentally stressed region (the areas to be bent).

It is noted that Schmidt et al. disclose a foil circuit board (a flexible circuit board) includes openings having cover layers A and A' formed on both side of the wiring layers (conductor layer) and also filled in the openings (A and A' are in one through the openings) that surely to protect the board from environmental hazards (purposes of cover layer is well known in the art). However, Schmidt et al. does not state the openings are intended being formed in an environmentally stressed region, which Ames et al. clearly disclose (the use of the flap openings).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa C. Nguyen whose telephone number is 571-272-8293. The examiner can normally be reached on M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hoa C. Nguyen
5/2/06



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